CLAIMS

What is claimed is:

1. A method of assigning resource units within a cell of a wireless time division duplex communication system, each resource unit is associated with a time slot and a code, the method comprising:

for selected ones of the cell's resource units, measuring a code interference level during that unit's time slot using that unit's code and determining whether that unit has an acceptable code interference level based on a comparison of that unit's measured code interference level with a threshold; and

assigning resource units to communications out of the selected ones resource units having an acceptable code interference level.

2. The method of claim 1 further comprising:

measuring a time slot interference level in selected time slots;

comparing the measured time slot interference level for each selected time slot to a threshold; and

eliminating ones of the selected time slots based on a result of the comparing; wherein the selected ones resource units do not include resource units of the eliminated ones time slots.

3. The method of claim 2 wherein the measuring a time slot interference level is performed using interference signal code power (ISCP).

4. The method of claim 3 wherein the ISCP is measured using a received power of midambles.

5.   The method of claim 2 wherein the measuring a time slot interference level is performed using a measure of inter-cell interference.

6.   The method of claim 2 wherein the measured time slot interference level comparing determines whether the measured time slot interference level exceeds the threshold and the eliminated ones of the selected time slots exceed the threshold.

7.   The method of claim 2 further comprising producing a preference matrix indicating which of the selected ones resource units are eliminated.

8.   The method of claim 7 wherein the preference matrix indicates eliminated time slots.

9.   The method of claim 7 wherein the assigning resource units is performed by reading the preference matrix and assigning a first available resource unit read in the preference matrix.

10.   The method of claim 7 wherein the assigning resource units is performed by first assigning a resource unit in the preference matrix with a lowest interference level.

11.   The method of claim 7 wherein the assigning resource units is performed by assigning multiple resource units of a user equipment to consecutive time slots.

12.   The method of claim 7 wherein the assigning resource units is performed by assigning multiple resource units of a user equipment to a same time slot.

13. A wireless time division duplex communication system using code division multiple access comprising:

a base station comprising:

a resource unit assignment device for receiving code interference levels for resource units, producing a preference matrix using the received code interference levels, and assigning resource units to communications using the preference matrix; and

a user equipment comprising:

a code power interference measurement device for measuring code interference levels of a resource unit using that unit's code during that unit's time slot; and

a resource unit assignment device for outputting code power interference measurements for use by the base station and assigning resource units to communications using the resource units assigned by the base station.

14. The system of claim 13 wherein the base station further comprises a code power interference measurement device for measuring code interference levels of a resource unit using that unit's code during that unit's time slot.

15. The system of claim 13 wherein the user equipment further comprises a time slot interference measurement device for measuring an interference level of a time slot and the resource unit assignment device sending the time slot interference measurements for use by the base station.

16. The system of claim 14 wherein the base station further comprises a time slot interference measurement device for measuring an interference level of a time slot.

17. The system of claim 13 wherein the user equipment measures code interference levels on a periodic basis.

18.   The system of claim 13 wherein the user equipment measures code interference levels when instructed by the base station.

19.   The system of claim 15 wherein the base station resource unit assignment device eliminates ones of the selected time slots having a measured interference exceeding a threshold.

20.   The system of claim 19 wherein the preference matrix indicates eliminated time slots.

21.   The system of claim 13 wherein the assigning resource units is performed by first assigning a resource unit in the preference matrix with a lowest interference level.

22.   The system of claim 13 wherein the assigning resource units is performed by assigning multiple resource units of a user equipment to consecutive time slots.

23.   The system of claim 13 wherein the assigning resource units is performed by assigning multiple resource units of a user equipment to a same time slot.

24.   A code power measurement device for measuring an interference level with respect to a desired code potentially used in a code division multiple access communication system, the code power measurement device comprising:

means for receiving a signal corresponding to a received radio frequency spectrum potentially used by the desired code;

means for correlating the received signal with the desired code; and

means for measuring a power level of the correlated signal.

25. The code power measurement device of claim 24 wherein the correlating means comprises a matched filter.

26. The code power measurement device of claim 24 wherein the correlating means comprises a despreader.

27. The code power measurement device of claim 24 wherein the desired code is complex and the correlating means performs a complex multiplication.

28. The code power measurement device of claim 24 wherein the correlating means comprises a correlator.

29. The code power measurement device of claim 24 wherein an output of the power level measuring means is an indicator of the measured power level of the correlated signal.

30. The code power measurement device of claim 24 for use in a time division duplex/code division multiple access system wherein the measured power level is measured in a time slot of interest.

31. A code power measurement device for measuring an interference level with respect to a desired code potentially used in a code division multiple access communication system, the code power measurement device comprising:

an input configured to receive a signal corresponding to a received radio frequency spectrum potentially used by the desired code;

a correlating device for correlating the received signal with the desired code; and

a power measurement device for measuring a power level of the correlated signal.

32.   The code power measurement device of claim 31 wherein the correlating device comprises a matched filter.

33.   The code power measurement device of claim 31 wherein the correlating device comprises a despreader.

34.   The code power measurement device of claim 31 wherein the desired code is complex and the correlating device performs a complex multiplication.

35.   The code power measurement device of claim 31 wherein the correlating device comprises a correlator.

36.   The code power measurement device of claim 31 wherein an output of the power measurement device is an indicator of the measured power level of the correlated signal.

37.   The code power measurement device of claim 31 for use in a time division duplex/code division multiple access system wherein the measured power level is measured in a time slot of interest.

38.   A method for measuring an interference level with respect to a desired code potentially used in a code division multiple access communication system, the method comprising:

receiving a signal corresponding to a received radio frequency spectrum potentially used by the desired code;

correlating the received signal with the desired code; and

measuring a power level of the correlated signal.

39.   The method of claim 38 further comprising determining an indicator of the measured power level.

40.   The method of claim 38 for use in a time division duplex/code division multiple access system wherein the measured power level is measured in a time slot of interest.

41.   A method for determining a maximum number of resource units to assign to a time slot, the method comprising:

measuring an interference level of the time slot;

comparing the measured interference level to a plurality of thresholds; and

using a result of the threshold comparing to determine the maximum number of codes to assign to the time slot.

42.   The method of claim 41 wherein the plurality of thresholds is a first and a second threshold; if the measured interference level is below the first threshold, no codes are assigned; if the measured interference level is between the first and second threshold, one code is a maximum number assigned; and if the measured interference level exceeds a third threshold, a plurality of codes is a maximum number of codes assigned.

43.   The method of claim 41 wherein the plurality of thresholds has a first and a last threshold; if the measured interference level is below the first threshold, no codes are assigned; and if the measured interference level exceeds the last threshold, a plurality of codes is a maximum number of codes assigned.

44.   The method of claim 41 wherein the measured interference level is measured using interference signal code power (ISCP).

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45.   The method of claim 41 wherein the ISCP is measured using a received power of midambles.

46.   The method of claim 41 wherein the measured interference level is measured using a measure of inter-cell interference.